

OCT 4 - 1918

Technical Paper, 206
PRINCETON, N. J.

DEPARTMENT OF THE INTERIOR

FRANKLIN K. LANE, SECRETARY

U. S. BUREAU OF MINES

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COKE-OVEN ACCIDENTS IN THE UNITED STATES

DURING THE CALENDAR YEAR 1917

COMPILED BY

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WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

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COKE-OVEN ACCIDENTS IN THE UNITED STATES DURING THE CALENDAR YEAR 1917.

Compiled by **ALBERT H. FAY.**

INTRODUCTION.

Reports received by the Bureau of Mines from operators of coke ovens show an increase in the number of fatalities and injuries during the calendar year 1916 as compared with previous years. The number of men killed in 1917 was 76, as compared with 45 in 1916. The total number of men reported employed for 1917 was 32,417, as compared with 31,603. The fatality rate in 1917 (based on the number of 300-day workers) was 2.14 per 1,000; in 1916 it was 1.32. The injury rate in 1917 was 188.59 per 1,000 men employed; in 1916 it was 153.49.

The reports tabulated herein represent 69,637 beehive ovens and 7,276 by-product ovens. In 1917 the average number of days active was 329; in 1916 the number was 324. The accident figures presented may not be complete for the entire industry, but they are representative enough to point out some of the principal hazards. The increase in accident rates is not necessarily on account of the work being more hazardous; rather it is due to the keeping of better records, those better records more nearly representing true conditions.

This is the third report^a published by the Bureau of Mines giving separate accident data for beehive and by-product ovens and indicating a greater hazard for the latter than the former.

ACKNOWLEDGMENTS.

The data presented in this paper were voluntarily supplied by the officials and managers of the coke companies at the request of the bureau, there being no law compelling coke operators to render a report. The bureau thanks the operators for their hearty cooperation and invites suggestions whereby the annual report of coke-oven accidents may be improved so as to best serve the industry. The author acknowledges the assistance rendered by W. W. Adams and Miss Lillian Chenoweth, of the Bureau of Mines, in the preparation of the various tables.

^a Fay, A. H., Coke-oven accidents in the United States during the calendar year 1915: Tech. Paper 151, Bureau of Mines, 1916. 18 pp.

Fay, A. H., Coke-oven accidents in the United States during the calendar year 1916: Tech. Paper 173, Bureau of Mines. 1917. 22 pp.

FATALITY AND INJURY RATES ON A 300-DAY BASIS.

In the previous reports relating to accidents at coke ovens the Bureau of Mines based all fatality and injury rates on the number of men reported as employed. As all the plants are not busy the same number of days in a year all of the labor and accident data submitted herein have been reduced to the equivalent number of 300-day workers. A summary of the bureau's earlier reports, reduced to the same basis, is included, thus making possible true comparisons of one year with another and also of one State with another.

CLASSIFICATION OF INJURIES.

Many of the States now have compensation laws, and in order to conform with their classification the bureau's classification of serious and slight injuries is on a 14-day (2-week) basis. The classification of injuries for 1917 is as follows:

<i>Classification of injuries for 1917.</i>		<i>Number injured.</i>
1. Fatal.....		76
2. Serious (time lost, more than 14 days):		
(a) Permanent disability—		
Total.....		2
Partial.....		72
(b) Others.....		735
3. Slight (time lost, 1 to 14 days, inclusive).....		5,904

Permanent total disability.—Loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis, or other condition permanently incapacitating a workman from doing any work of a gainful occupation.

Permanent partial disability.—Loss of one foot, leg, hand, eye, one or more fingers, one or more toes, any dislocation where ligaments are severed, or any other injury known in surgery to be permanent partial disability.

STATISTICAL TABLES.

Table 1 shows the number of men killed and injured at coke ovens, by causes, and also the number killed and injured per 1,000 300-day workers for the years 1914 to 1917, inclusive.

Table 2 gives labor statistics by States and years for all coke ovens. It also shows the number of days of labor performed and the equivalent number of 300-day workers upon which the fatality and injury rates shown in Table 1 have been calculated.

Table 3 presents the number of fatalities and number of injuries at coke ovens, by States; also the fatality and injury rates based on the equivalent number of 300-day workers. Table 4 shows the number of ovens, by States, for which accidents were reported for

the years 1915, 1916, and 1917. Table 5 shows the average number of days the coke ovens in each State were operated for each of these years. The average number of days all coke ovens in the United States operated in 1917 was 329, as compared with 324 in 1916, 303 in 1915, and 286 in 1914. Table 6 shows the number of the widows and orphans from men being killed at coke ovens, by States, for the years 1914 to 1917, inclusive.

Table 7 gives the actual number of fatalities and injuries, by causes, for the four-year period ended December 31, 1917, and also the percentage of fatalities and injuries from each cause. Of the total number of fatalities 40.20 per cent was due to haulage systems, 12.26 per cent to falls of persons, and 8.33 per cent to burns. Coke-drawing machines and electricity are each responsible for 5.39 per cent of the fatalities.

Of the injuries 11.40 per cent are due to haulage systems; 14.13 per cent to falls of persons; 10.82 per cent to hand tools; 13.46 per cent to burns; and 44.97 per cent are classified as being due to other causes.

Tables 8 and 9 show fatalities and injuries, by causes and by States, for the year 1917, with a summary for previous years.

ACCIDENTS AT BEEHIVE AND BY-PRODUCT OVENS.

The report for 1915^a gave for the first time a segregation of by-product and beehive oven accidents. In Tables 10 to 14, inclusive, the data for these two branches of the industry are segregated for 1917. During that year 18,820 men were employed at beehive ovens and 13,597 at by-product plants; the by-product ovens were active 360 days and the beehive ovens 308 days, hence the number of 300-day workers at the by-product plants is considerably in excess of the actual number of men employed. The number of men killed at beehive ovens was 25, whereas 51 were killed at by-product ovens.

Tables 11 and 12 show, respectively, the fatalities and injuries at by-product ovens, by causes and by States, for the year 1917. Table 13 shows the actual number of men employed and also the equivalent number of 300-day workers in each State. Table 14 shows the fatality and injury rates, by principal causes, per 1,000 300-day workers at beehive and at by-product ovens. The wide difference in these rates may be due in part to the manner of reporting accidents, as the companies operating the by-product ovens may keep somewhat better records and make fuller and more complete reports than many of the operators of beehive ovens.

^a Fay, A. H., Coke-oven accidents in the United States during the calendar year 1915: Tech. Paper 151, Bureau of Mines, 1916, 18 pp.

TABLE 1.—All coke ovens: Fatalities and injuries, by causes, during the years ended Dec. 31, 1914 to 1917.

Cause.	Killed.				Injured.				Killed per 1,000—300-day workers.				Injured per 1,000—300-day workers.			
	1914	1915	1916	1917	1914	1915	1916	1917	1914	1915	1916	1917	1914	1915	1916	1917
Cars, larries, and motors.....	5	10	9	17	135	123	369	574	0.24	0.32	0.26	0.48	6.36	3.91	10.81	16.13
Railway cars and locomotives.....	9	4	10	18	71	139	189	336	.42	.13	.29	.51	3.34	4.42	4.42	9.44
Coke-drawing machines.....	4	4	2	3	71	96	189	291	.19	.06	.06	.08	3.34	3.06	5.54	7.33
Electricity.....	5	5	3	2	24	16	33	50	.24	.03	.09	.22	1.13	.51	.97	1.40
Falls of persons.....	6	4	7	8	314	387	764	935	.28	.13	.21	.66	14.78	12.32	22.39	26.27
Hand tools.....	1	2	2	5	269	322	503	715	.05	.....	.....	.....	14.08	10.25	14.74	20.09
Suffocation from gases.....	2	7	2	6	11	17	16	40	.....	.06	.....	.14	1.52	.54	.47	1.12
Burns.....	2	7	2	6	299	349	802	837	.09	.22	.06	.17	14.08	11.11	23.51	23.51
Gas explosions.....	(a)	(a)	.....	1	(a)	26	38	38	(a)	.....	.....	.03	(a)	.....	76	1.07
Other causes.....	13	8	12	16	985	1,403	2,346	2,927	.61	.26	.35	.45	45.43	44.66	68.76	82.23
Total.....	45	38	45	76	2,189	2,852	5,237	6,713	2.12	1.21	1.32	2.14	103.06	90.78	153.49	188.59

a Not segregated.

TABLE 2.—All coke ovens: Labor statistics, by States, for the years ended Dec. 31, 1914 to 1917.

State.	Men employed.				Days of labor performed.				Number of 300-day workers (calculated).			
	1914	1915	1916	1917	1914	1915	1916	1917	1914	1915	1916	1917
Alabama.....	2,281	2,153	3,470	3,720	741,013	629,406	1,130,697	1,300,586	2,470	2,098	3,769	4,335
Colorado.....	458	527	652	677	124,704	145,120	198,759	212,266	416	484	642	708
Illinois.....	1,117	1,109	1,468	1,757	407,705	444,085	537,288	641,305	1,359	1,422	1,701	2,138
Indiana.....	(a)	1,218	1,094	1,569	(a)	444,570	399,154	572,685	(a)	1,452	1,331	1,909
Kentucky.....	456	627	869	822	138,105	192,506	297,769	280,846	460	642	992	938
New Mexico.....	(a)	(a)	365	322	(a)	(a)	131,875	116,400	(a)	(a)	440	388
Ohio.....	517	701	1,475	1,528	155,632	236,496	459,776	557,336	519	788	1,503	1,858
Pennsylvania.....	11,991	18,849	14,778	13,247	3,163,716	5,907,146	4,663,903	4,098,507	10,546	18,600	15,546	13,662
Tennessee.....	191	315	390	405	57,964	77,680	118,027	125,050	193	259	393	417
Virginia.....	884	1,220	1,406	1,088	209,779	268,840	409,720	327,686	733	896	1,366	1,092
Washington.....	(a)	80	87	67	(a)	25,707	26,454	18,040	(a)	80	88	60
West Virginia.....	1,408	1,178	2,137	3,215	341,773	323,646	657,339	1,003,324	1,139	1,079	2,191	3,344
Other States.....	3,010	3,023	3,382	4,000	1,021,869	1,046,675	1,213,983	1,424,368	3,406	3,489	4,047	4,748
Total.....	22,313	31,060	31,603	32,417	6,372,259	9,424,476	10,235,674	10,678,429	21,241	31,415	34,119	35,595

a Included in "Other States."

TABLE 3.—All coke ovens: Fatalities and injuries, by States, during the years ended Dec. 31, 1914 to 1917.

State.	Killed.				Injured.				Killed per 1,000—300-day workers.				Injured per 1,000—300-day workers.			
	1914	1915	1916	1917	1914	1915	1916	1917	1914	1915	1916	1917	1914	1915	1916	1917
Alabama.....	5	6	2	5	302	500	564	655	2.02	2.86	0.53	1.15	122.27	242.61	149.64	151.10
Colorado.....	2	1	1	1	4	13	13	14	4.81	2.07	1.51	.....	9.62	26.86	19.64	19.77
Illinois.....	3	2	3	5	419	449	328	831	2.21	1.41	1.68	2.34	308.31	315.75	183.14	388.68
Indiana.....	(a)	3	4	6	(a)	155	514	317	(a)	2.02	3.01	3.14	(a)	104.59	386.18	196.06
Kentucky.....	2	0	1	1	127	98	305	293	4.35	(a)	1.01	1.07	276.09	152.65	307.46	280.98
New Mexico.....	(a)	(a)	2	.....	(a)	(a)	6	10	(a)	(a)	4.55	.....	(a)	(a)	13.64	25.77
Ohio.....	5	0	.....	5	112	190	337	318	9.63	.....	.....	2.69	215.80	203.05	224.22	171.15
Pennsylvania.....	21	16	25	40	567	844	1,088	1,921	1.99	.....	1.61	2.93	53.76	45.16	135.60	140.61
Tennessee.....	2	0	2	.....	9	38	64	48	2.73	2.23	1.46	.....	10.36	146.72	162.85	69.54
Virginia.....	2	2	2	1	9	10	59	19	(a)	(a)	.....	.92	12.28	11.16	43.19	43.96
West Virginia.....	(a)	0	0	.....	(a)	34	19	13	(a)	.....	.....	.....	(a)	395.35	215.91	216.67
Other States.....	1	0	0	3	34	28	93	80	88	.....	.....	.90	20.85	25.95	42.45	23.92
.....	4	8	5	10	613	514	827	2,214	1.17	2.20	1.24	2.11	129.98	147.32	204.35	466.30
Total.....	45	38	45	76	2,189	2,852	5,237	6,713	2.12	1.21	1.32	2.14	103.06	90.78	153.49	183.59

a Included in "Other States."

TABLE 4.—*Number of ovens for which accident reports were received during the years ended Dec. 31, 1915 to 1917.***Beehive Ovens.**

State.	1915	1916	1917
Alabama.....	2,844	4,436	5,288
Colorado.....	1,388	2,118	2,302
Kentucky.....	820	838	769
New Mexico.....	(a)	980	1,124
Ohio.....	215	205	198
Pennsylvania.....	36,047	41,370	46,978
Tennessee.....	703	848	961
Virginia.....	1,342	3,193	3,071
Washington.....	223	238	175
West Virginia.....	3,595	6,602	7,894
Other States.....	1,589	878	877
Total.....	48,766	61,706	69,637

By-Product Ovens.

State.	1915	1916	1917
Alabama.....	750	743	827
Illinois.....	626	626	626
Indiana.....	790	689	834
Ohio.....	285	745	591
Pennsylvania.....	1,612	2,252	2,106
Other States.....	2,283	2,035	2,292
Total.....	6,346	7,090	7,276

^a Included in "Other States."TABLE 5.—*Average number of days coke ovens operated during the years ended Dec. 31, 1914 to 1917.*

State.	1914	1915	1916	1917
Alabama.....	325	292	326	350
Colorado.....	272	275	305	314
Illinois.....	365	365	366	365
Indiana.....	(a)	365	365	365
Kentucky.....	303	307	331	342
New Mexico.....	(a)	(a)	361	361
Ohio.....	301	337	306	365
Pennsylvania.....	264	297	316	309
Tennessee.....	303	247	303	309
Virginia.....	249	220	291	301
Washington.....	(a)	321	304	269
West Virginia.....	243	275	308	312
Other States.....	339	346	359	356
Total.....	286	303	324	329

^a Included in "Other States."TABLE 6.—*Widows and orphans through fatal accidents at coke ovens during the years ended Dec. 31, 1914 to 1917.*

State.	Widows.				Orphans.			
	1914	1915	1916	1917	1914	1915	1916	1917
Alabama.....	2	3	2	1	1	5	2	0
Colorado.....	0	0	1	0	0	0	3	0
Illinois.....	1	2	1	1	1	4	0	1
Indiana.....	(a)	3	1	6	(a)	5	3	12
Kentucky.....	0	0	0	0	0	0	0	0
New Mexico.....	(a)	(a)	1	0	(a)	(a)	4	0
Ohio.....	3	0	0	4	11	0	0	8
Pennsylvania.....	13	7	12	23	43	24	42	48
Tennessee.....	0	0	0	0	0	0	0	0
Virginia.....	1	1	0	1	1	3	0	2
Washington.....	(a)	0	0	0	(a)	0	0	0
West Virginia.....	1	0	0	3	0	0	0	2
Other States.....	4	3	3	5	12	1	1	8
Total.....	25	19	21	44	69	42	55	81

^a Included in "Other States."

TABLE 7.—All coke ovens: Fatalities and injuries, by causes, with percentage due to each cause, during the 4-year period ended Dec. 31, 1917.

Cause.	Killed.		Injured.	
	Number.	Per cent of total.	Number.	Per cent of total.
Cars, larries, and motors.....	41	20.10	1,201	7.07
Railway cars and locomotives.....	41	20.10	735	4.33
Coke-drawing machines.....	11	5.39	617	3.63
Electricity.....	11	5.39	123	.72
Falls of persons.....	25	12.26	2,400	14.13
Hand tools.....	1	.49	1,839	10.82
Suffocation from gases.....	7	3.43	84	.49
Burns.....	17	8.33	2,287	13.46
Gas explosions ^a	1	.49	64	.38
Other causes.....	49	24.02	7,641	44.97
Total.....	204	100.00	16,991	100.00

^a Not segregated prior to 1916.**TABLE 8.—All coke ovens: Fatalities, by causes and States, during the year ended Dec. 31, 1917.**

State.	Cars, larries, and motors.	Railway cars and locomotives.	Coke-drawing machines.	Electricity.	Falls of persons.	Hand tools.	Suffocation from gases.	Burns.	Gas explosions.	Other causes.	Total.
	1	2	3	4	5	6	7	8	9	10	
Alabama.....		1	1		1			1		1	5
Colorado.....											0
Illinois.....	3			1						1	5
Indiana.....	1			1			1	1	1	1	6
Kentucky.....					1						1
New Mexico.....											0
Ohio.....	1	3						1			5
Pennsylvania.....	10	7	2		4		4	2		11	40
Tennessee.....											0
Virginia.....		1									1
Washington.....											0
West Virginia.....	1	2						1			3
Other States.....	1	4			2			1		2	10
Total, 1917.....	17	18	3	2	8		5	6	1	16	76
Total, 1916.....	9	10	2	3	7			2		12	45
Total, 1915.....	10	4	2	1	4		2	7	(a)	8	38
Total, 1914.....	5	9	4	5	6	1		2	(a)	13	45

^a Not segregated.

TABLE 9.—*All coke ovens: Injuries, by causes and States, during the year ended Dec. 31, 1917.*

State.	Cars, larries, and motors.	Railway cars and locomotives.	Coke-drawing machines.	Electricity.	Falls of persons.	Hand tools.	Suffocation from gases.	Burns.	Gas explosions.	Other causes.	Total.
	1	2	3	4	5	6	7	8	9	10	
Alabama.....	63	43	31	10	60	67	4	147	3	227	655
Colorado.....	4				4	1				5	14
Illinois.....	76	53	29	4	82	80	4	88	4	411	831
Indiana.....	13	8	22	5	7	39	4	45	6	168	317
Kentucky.....	24	14	8		49	44	3	28		93	203
New Mexico.....	3	2				1				4	10
Ohio.....	16	12	20	2	38	25	2	48	1	154	318
Pennsylvania.....	184	55	79	8	388	229	4	183	13	778	1,921
Tennessee.....	4	5				4		7		9	29
Virginia.....	12	5			13			9		9	48
Washington.....			1			1		1		10	13
West Virginia.....	8	9	6	1	15	11		9		21	80
Other States.....	167	130	65	20	279	213	19	272	11	1,038	2,214
Total, 1917.....	574	336	261	50	935	715	40	837	38	2,927	6,713
Total, 1916.....	369	189	189	33	764	503	16	802	26	2,346	5,237
Total, 1915.....	123	139	96	16	387	322	17	349	(a)	1,403	2,852
Total, 1914.....	135	71	71	21	314	299	11	299	(a)	965	2,189

(a) Not segregated.

TABLE 10.—*Beehive and by-product coke ovens: Men employed, fatalities, injuries, and days worked, by States, during the year ended Dec. 31, 1917.*

Beehive Ovens.

State.	Days of labor performed.	Average days active.	Killed.	Injured.	Widows.	Orphans.
Alabama.....	642,571	341	1	143	1	
Colorado.....	212,266	314		14		
Kentucky.....	63,671	280		24		
New Mexico.....	116,400	361		10		
Ohio.....	20,056	358		21		
Pennsylvania.....	3,248,772	300	19	1,457	12	30
Tennessee.....	94,025	294		5		
Virginia.....	327,686	301	1	48		2
Washington.....	10,740	229		2	1	
West Virginia.....	949,304	310	3	49	3	2
Other States.....	103,085	362	1	49		3
Total, 1917.....	5,788,576	308	25	1,822	17	37
Total, 1916.....	5,577,341	300	24	1,866	12	47

By-product Ovens.

State.	Days of labor performed.	Average days active.	Killed.	Injured.	Widows.	Orphans.
Alabama.....	658,015	359	4	512		
Illinois.....	641,305	365	5	831	1	1
Indiana.....	572,685	365	6	317	6	12
Ohio.....	537,280	365	5	297	4	8
Pennsylvania.....	849,735	354	21	464	11	18
Other States.....	1,630,833	357	10	2,470	5	5
Total, 1917.....	4,889,853	360	51	4,891	27	44
Total, 1916.....	4,658,333	357	21	3,371	9	8
Grand total, 1917.....	10,678,429	329	76	6,713	44	81
Grand total, 1916.....	10,235,674	324	45	5,237	21	55

TABLE 11.—Beehive and by-product coke ovens: Fatalities, by causes and States during the year ended Dec. 31, 1917.**Beehive Ovens.**

State.	Cars, carries, and motors.	Railway cars and locomotives.	Coke-drawing machines.	Electricity.	Falls of persons.	Hand tools.	Suffocation from gases.	Burns.	Gas explosions.	Other causes.	Total, 1917.	Total, 1916.
	1	2	3	4	5	6	7	8	9	10		
Alabama.....										1	1	1
Colorado.....											0	1
Kentucky.....											0	2
New Mexico.....											0	0
Ohio.....											0	0
Pennsylvania.....	8	3			1					7	19	17
Tennessee.....											0	0
Virginia.....		1									1	2
Washington.....											0	0
West Virginia.....	1	2									3	0
Other States.....		1									1	0
Total, 1917.....	9	7			1					8	25	
Total, 1916.....	7	5	1		2					9		24

By-product Ovens.

Alabama.....		1	1		1			1			4	1
Illinois.....	3			1						1	5	3
Indiana.....	1			1			1	1	1	1	6	4
Ohio.....	1	3						1			5	0
Pennsylvania.....	2	4	2		3		4	2		4	21	8
Other States.....	1	3			3			1		2	10	5
Total, 1917.....	8	11	3	2	7		5	6	1	8	51	
Total, 1916.....	2	5	1	3	5			2		3		21
Grand total, 1917.....	17	18	3	2	8		5	6	1	16	76	
Grand total, 1916.....	9	10	2	3	7			2		12		45

TABLE 12.—*Beehive and by-product coke ovens: Injuries, by causes and States, during the year ended Dec. 31, 1917.*

Beehive Ovens.

State.	Cars, laries, and motors.	Rail-car cars and locomotives.	Coke-drawing ma- chines.	Electricity.	Falls of persons.	Hand tools.	Suffocation from gases.	Burns.	Gas explosions.	Other causes.	Total, 1917.	Total, 1916.
	1	2	3	4	5	6	7	8	9	10		
Alabama.....	9	5	4	.....	6	12	.....	34	.....	73	143	162
Colorado.....	4	.....	.....	.....	4	1	.....	.....	.....	5	14	13
Kentucky.....	2	.....	.....	.....	10	7	.....	4	.....	1	24	17
New Mexico.....	3	2	.....	.....	.....	1	.....	.....	.....	4	10	6
Ohio.....	.....	.....	7	.....	.....	.....	.....	.....	.....	13	21	25
Pennsylvania.....	161	37	63	4	321	162	.....	95	5	606	1,457	1,456
Tennessee.....	3	.....	.....	.....	.....	.....	.....	2	.....	.....	5	6
Virginia.....	12	5	.....	.....	13	.....	.....	9	.....	9	48	59
Washington.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	2	9
West Virginia.....	6	8	5	1	8	6	.....	7	.....	8	49	84
Other States.....	2	.....	.....	.....	7	.....	.....	6	.....	31	49	29
Total, 1917.....	202	57	80	5	373	190	.....	157	5	753	1,822	.....
Total, 1916.....	230	68	86	20	338	182	.....	270	.....	672	.....	1,866

By-product Ovens.

	54	38	27	10	54	55	4	113	3	154	512	402
Alabama.....	54	38	27	10	54	55	4	113	3	154	512	402
Illinois.....	76	53	29	4	82	80	4	88	4	411	831	328
Indiana.....	13	8	22	5	7	31	4	45	6	168	317	514
Ohio.....	16	12	13	2	37	25	2	48	1	141	297	312
Pennsylvania.....	23	18	16	4	64	67	4	88	8	172	464	652
Other States.....	190	150	74	20	318	259	22	298	11	1,128	2,470	1,163
Total, 1917.....	372	279	181	45	562	525	40	680	33	2,174	4,891	.....
Total, 1916.....	139	121	103	13	426	321	16	532	26	1,674	.....	3,371
Grand total, 1917.....	574	336	261	50	935	715	40	837	38	2,927	6,713	.....
Grand total, 1916.....	369	189	189	33	764	503	16	802	26	2,346	.....	5,237

TABLE 13.—*Beehive and by-product coke ovens: Men employed, equivalent in 300-day workers, and fatalities and injuries, by States, during the year ended Dec. 31, 1917.*

State.	Men employed.		Killed.	Injured.	Per 1,000—300-day workers.	
	Actual number.	Equivalent in 300-day workers.			Killed.	Injured.
Alabama.....	1,885	2,142	1	143	0.47	66.76
Colorado.....	677	708	.....	14	.....	19.77
Kentucky.....	227	212	.....	24	.....	113.21
New Mexico.....	322	388	.....	10	.....	25.77
Ohio.....	56	67	.....	21	.....	313.43
Pennsylvania.....	10,846	10,820	19	1,457	1.75	134.55
Tennessee.....	320	313	.....	5	.....	15.97
Virginia.....	1,088	1,092	1	48	.92	43.96
Washington.....	47	36	.....	2	.....	55.56
West Virginia.....	3,067	3,164	3	49	.95	15.49
Other States.....	285	344	1	49	2.91	142.44
Total, 1917.....	18,820	19,295	25	1,822	1.30	94.43
Total, 1916.....	18,570	18,591	24	1,866	1.29	100.37

By-product Ovens.

Alabama.....	1,835	2,193	4	512	1.82	233.47
Illinois.....	1,757	2,138	5	831	2.34	388.68
Indiana.....	1,569	1,969	6	317	3.14	166.06
Ohio.....	1,472	1,791	5	297	2.79	165.83
Pennsylvania.....	2,401	2,833	21	464	7.41	163.78
Other States.....	4,563	5,436	10	2,470	1.84	454.38
Total, 1917.....	13,597	16,300	51	4,691	3.13	300.06
Total, 1916.....	13,033	15,528	21	3,371	1.35	217.09
Grand total, 1917.....	32,417	35,595	76	6,713	2.14	188.59
Grand total, 1916.....	31,603	34,119	45	5,237	1.32	153.49

TABLE 14.—*Beehive and by-product coke ovens: Fatalities and injuries per 1,000 300-day workers, by causes, during the years ended Dec. 31, 1916 and 1917.*

Cause.	Killed. ^a				Injured. ^b			
	1916		1917		1916		1917	
	Bee-hive.	By-product.	Bee-hive.	By-product.	Bee-hive.	By-product.	Bee-hive.	By-product.
Cars, larries, and motors.....	0.38	0.13	0.47	0.49	12.37	8.95	10.47	22.82
Railway cars and locomotives.....	.27	.32	.36	.68	3.66	7.79	2.95	17.12
Coke-drawing machines.....	.05	.07	.....	.18	4.63	6.63	4.14	11.10
Electricity.....	.....	.19	.....	.12	1.07	.84	.26	2.76
Falls of persons.....	.11	.32	.05	.43	18.18	27.43	19.33	34.48
Hand tools.....	.....	.....	.....	9.79	20.67	9.85	32.21	32.21
Suffocation from gases.....	.....	.....	.....	.31	.....	1.03	.....	2.45
Burns.....	.....	.13	.....	.37	14.52	34.26	8.14	41.72
Gas explosions.....	.....	.....	.....	.06	.....	1.68	.26	2.02
Other causes.....	.48	.19	.42	.49	36.15	107.81	39.03	133.38
Total.....	1.29	1.35	1.30	3.13	100.37	217.09	94.43	300.06

^a For number of fatalities, see Table 11.^b For number of injuries, see Table 12.

TABLE 15.—Amount of coal used for coking purposes and amount of coke produced, by States, during the years ended Dec. 31, 1913 to 1916.^a
[Short tons, 2,000 pounds.]

State.	1913		1914		1915		1916	
	Coal used.	Coke produced.	Coal used.	Coke produced.	Coal used.	Coke produced.	Coal used.	Coke produced.
Alabama.....	5,218,323	3,323,664	4,678,196	3,084,149	4,695,938	3,071,811	6,794,100	4,298,417
Colorado.....	1,349,743	879,461	1,048,251	666,083	1,026,019	670,938	1,674,096	1,053,553
Illinois.....	2,481,198	1,839,533	1,932,132	1,425,168	2,335,933	1,686,998	3,182,650	2,320,400
Indiana.....	3,535,196	2,727,025	3,125,207	2,276,652	3,685,774	2,768,099	4,626,204	3,489,660
Kentucky.....	512,245	317,084	672,624	443,959	799,847	526,097	1,205,109	802,526
New Mexico.....	788,172	467,946	660,501	362,572	732,830	389,411	843,814	502,812
Ohio.....	507,417	351,846	745,697	521,638	985,471	684,658	2,004,772	1,803,268
Pennsylvania.....	43,195,801	28,733,444	30,286,961	20,258,393	38,273,744	25,622,862	46,950,086	31,279,695
Tennessee.....	694,085	304,578	487,446	264,127	465,865	256,973	673,860	382,175
Virginia.....	2,015,259	1,303,603	1,319,901	780,984	995,396	629,807	1,977,616	1,242,332
Washington.....	118,786	76,221	133,349	84,923	204,879	136,552	(b)	(b)
West Virginia.....	4,034,251	2,472,732	2,316,309	1,427,962	2,273,763	1,391,446	4,072,415	2,521,309
Other States.....	4,788,774	3,402,354	4,217,776	2,959,304	5,357,439	3,745,498	7,004,729	4,837,438
Total.....	69,239,190	46,299,530	51,623,750	34,555,914	61,832,898	41,561,150	81,609,460	54,533,585
Value.....	\$100,361,439	\$128,922,273	\$74,949,565	\$88,334,217	\$90,034,124	\$106,503,868	\$135,067,694	\$170,841,197

^a Compiled from Mineral Resources of the United States, U. S. Geol. Survey.^b Included in "Other States."

TABLE 16.—Statistics of the manufacture of coke in the United States, 1850–1917.^a

Year.	Number of ovens operated.		Coal used (short tons).	Coke produced (short tons).	Value of coke at ovens.	Price per ton at ovens.	Percentage yield of coal in coke.	Number employed. ^b
	Bee-hive.	By-product.						
1850 ^b					\$15,250			14
1860 ^b					189,844			198
1870 ^b					1,132,386			528
1880.....			5,237,741	3,338,300	6,631,267	\$1.99	63.0	3,142
1881.....			6,546,662	4,113,760	7,725,175	1.88	63.0	
1882.....			7,577,648	4,793,321	8,462,167	1.77	63.0	
1883.....			8,516,670	5,464,721	8,121,607	1.49	64.0	
1884.....			7,951,974	4,873,805	7,242,878	1.49	61.0	
1885.....			8,071,126	5,106,696	7,629,118	1.49	63.0	
1886.....			10,688,972	6,845,369	11,153,366	1.63	64.0	
1887.....			11,559,752	7,611,705	15,321,116	2.01	64.0	
1888.....			12,945,350	8,540,030	12,445,963	1.46	66.0	
1889.....			15,969,973	10,258,022	16,630,391	1.62	64.0	8,998
1890.....			18,005,209	11,508,021	23,215,302	2.02	64.0	
1891.....			16,344,540	10,352,688	20,323,216	1.97	63.0	
1892.....			18,813,337	12,010,829	23,536,141	1.96	64.0	
1893.....	12		14,917,146	9,477,580	16,523,714	1.74	63.5	
1894.....	12		14,348,750	9,203,632	12,328,856	1.34	64.0	
1895.....	72		20,848,323	13,333,714	19,234,319	1.44	64.0	
1896.....		160	18,694,422	11,788,773	21,660,729	1.84	63.0	
1897.....		280	20,947,319	13,288,984	22,102,514	1.66	63.5	
1898.....		520	25,219,570	16,047,249	25,586,699	1.59	63.6	
1899.....	45,693	1,020	31,219,343	19,668,569	34,670,417	1.76	65.1	16,999
1900.....	41,954	1,085	32,113,553	20,533,348	47,443,331	2.31	63.9	
1901.....	60,231	1,165	34,207,965	21,795,883	44,445,923	2.04	63.7	
1902.....	65,461	1,663	39,604,007	25,401,730	63,339,167	2.49	64.1	
1903.....	75,379	1,956	39,423,525	25,271,281	66,498,664	2.63	64.1	
1904.....	74,111	2,910	35,531,698	23,661,106	46,144,941	1.95	64.8	18,981
1905.....	78,644	2,988	49,530,677	32,231,129	72,476,196	2.25	65.1	
1906.....	85,234	3,362	55,746,374	36,401,217	91,608,034	2.52	65.3	
1907.....	91,935	3,811	61,946,109	40,779,564	111,539,126	2.74	65.8	
1908.....	84,619	3,679	39,440,837	24,033,518	62,433,983	2.40	66.0	
1909.....		3,914	59,354,937	39,315,065	89,965,483	2.29	66.2	29,273
1910.....	92,016	4,051	63,088,327	41,708,810	99,742,701	2.39	66.1	
1911.....	59,160	4,320	53,278,248	35,551,489	84,130,849	2.37	66.7	
1912.....	67,847	5,211	65,577,862	43,983,599	111,865,113	2.54	67.1	
1913.....	66,477	5,331	69,239,190	46,299,530	128,922,273	2.78	66.9	
1914.....	49,496	5,142	51,623,750	31,555,914	88,334,217	2.56	66.9	
1915.....	48,985	6,036	61,832,898	41,581,150	105,503,868	2.54	67.2	
1916.....	65,605	6,607	81,609,460	54,533,585	170,841,197	3.13	66.8	
1917.....								

^a Compiled from Mineral Resources, U. S. Geol. Survey.^b Compiled from Census Reports.

TABLE 17.—*Coal-mine data, 1916 and 1917.*

State.	Production (short tons), 1916. ^a	Men employed, 1916. ^a	Number killed.	
			1916.	1917. ^b
Alabama.....	18,086,197	25,308	119	108
Alaska.....	13,073	83	0	0
Arkansas.....	1,994,915	3,772	7	17
California, Idaho, and Nevada.....	7,210	18	0	0
Colorado.....	10,481,237	13,104	43	188
Georgia and North Carolina.....	173,551	411	1	1
Illinois.....	66,193,536	75,538	128	233
Indiana.....	20,093,528	23,965	51	76
Iowa.....	7,260,800	14,443	31	36
Kansas.....	6,881,455	12,132	54	39
Kentucky.....	25,333,957	31,222	75	142
Maryland.....	4,469,016	31,633	32	21
Michigan.....	1,180,360	2,535	2	4
Missouri.....	4,742,146	9,654	6	11
Montana.....	3,632,527	3,781	16	23
New Mexico.....	3,793,011	4,522	19	16
North Dakota.....	634,912	714	1	3
Ohio.....	31,728,219	41,394	108	108
Oklahoma.....	3,608,011	7,800	26	37
Oregon.....	42,592	106	3	0
Pennsylvania (anthracite).....	87,578,473	159,869	555	582
Pennsylvania (bituminous).....	170,235,424	168,212	433	495
South Dakota.....	8,886	38	0	0
Tennessee.....	6,137,449	9,211	15	28
Texas.....	1,987,503	4,181	2	1
Utah.....	3,567,428	3,129	23	22
Virginia.....	9,707,474	9,777	53	63
Washington.....	3,038,588	4,797	21	39
West Virginia.....	86,460,127	78,067	372	384
Wyoming.....	7,910,647	7,255	30	37
Total, 1916.....	530,098,175	720,971	2,226	2,696

^a Data furnished by U. S. Geol. Survey.^b Subject to slight revision.

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